

Culebra Cut, 150 to 260 feet above mean tide level. There, in squeezed-up marine strata, easily recognizable marine species may be found in considerable numbers. Some are, perhaps, as old as the Tertiary period, but many of them can be duplicated, alive, on the Pacific beaches. Coral is found 262 feet above present mean tide. Fifteen miles away in the Chagres basin marine deposits are also found. Sometime, not so very long ago, there was an open strait where the Isthmus now is. Is the Isthmus younger, very much younger, than scientifically supposed? How much younger? Is there any evidence—not of its age—but of its youth, to be found in the five tons of shell-bearing material sent to Washington by the diggers in Culebra Cut? I don't know. I'm only a gatherer of shells—with an imagination and some disposition to ask questions.

ON SOME CUBAN UROCOPTIDÆ.

BY H. A. PILSBRY.

The following notes relate to new or rare species collected by the writer in 1904. My journey was a rather rapid one, undertaken with the object of seeing something of the mollusk fauna of the central part of the island, as nearly all the Cuban shells I had studied had been taken in the relatively far richer and more frequently explored regions from Havana Province west, and in Santiago Province, or Oriente as it is now called.

My route was from Havana to Cienfuegos by rail, thence to Casilda, the Port of Trinidad, by the Menendez steamship line, thence to Tunas de Zaza on the south coast; by rail then to Sancti Spiritus, eastward to Majagua in Camaguey Province, and return by way of Matanzas. Collecting was done at the places mentioned as well as at many places along the route, and others within a day's journey on foot or mule from those named.

Around Havana, Matanzas, etc., various well-known *Urocoptidæ* were taken which call for no special notice, and also several forms of the *U. elegans* group—a very difficult series, not yet worked up, and extremely abundant in the environs of Matanzas and in Havana Province. *Urocoptis cara* P. & H., *U. longa* P. & H., and the following species may be mentioned among the new forms taken.

UROCOPTIS (COCHLODINELLA) MEDIANA, n. sp. Pl. VIII, figs. 1, 2, 3.

The shell is cylindric-fusiform, the upper half or third tapering slowly to the truncate summit; thin; whitish-corneous with some indistinct clear corneous maculation. Sculpture of thread-like rib-striae, equal to or narrower than their intervals, nearly straight, slightly oblique, and somewhat irregular, *as though a thread were here and there omitted*. Close behind the lip the striation is crowded. Suture distinctly denticulated by the rib-striae. The whorls are slightly convex, the last very shortly free in front, with a cord-like basal keel. The aperture is oblique, circular; peristome expanded and shortly reflected. The axis is slender and simple, as in *U. poeyana*.

Length 18, diam. 4, diam. aperture 3 mm.; $11\frac{1}{2}$ whorls.

Length 16.5, diam. 3.4, diam. aperture 3 mm.; 11 whorls.

Length 15.5, diam. 3, diam. aperture 2.4 mm.; 10 whorls.

Zaza del Medio, Province of Santa Clara, on a small rocky hill close to the Cuban Central R. R., under stones.

This species is closely related to *U. poeyana*, from which it differs by the coarser striation, which is moreover irregular in places, while in *U. poeyana* the sculpture is close and even.

UROCOPTIS (GONGYLOSTOMA) CANTEROIANA (Arango). Pl. VIII, figs. 4, 5.

Cylindrella canteroiana Gundlach MS., Arago, Anales Real Acad. Ciencias Habana, XII, p. 284, 1876.

A translation of the very brief and unsatisfactory description of this species may be found in my Manual of Conchology, XV, p. 254. In 1904 I collected it on the fine hill "La Vigia," which forms the background of the town of Trinidad, and where Gundlach had collected the types a half-century before. I found it on the slope looking out over the Caribbean Sea, on the west slope, and in a cave near the foot. Also in the foothills of the Trinidad Mountains on the west side of the valley of Trinidad, and along the trail in these mountains about two miles from San Joan de Letran.

The shell is cylindrical, the upper half or third tapering to a rather narrow truncation; uniform light brown, with lighter riblets; somewhat glossy. Sculpture of even, rather strong rib-striae, nearly straight except on the last whorl or two where they are slightly

curved, as wide as their intervals. Sutures rather deep, whorls slightly convex, the last rounded below, very shortly free in front. The aperture is somewhat oblique, shortly oval, a little longer than wide. Peristome continuous and free, very little expanded, somewhat thickened, narrowly reflected. Axis bears one thin, minutely crenulated spiral lamella.

Length 14, diam. 3 mm.; 13 whorls.

Length 12, diam. 2.6 mm.; $13\frac{1}{2}$ whorls.

UROCOPTIS (GONGYLOSTOMA) CIENFUEGOSENSIS, n. sp. Pl. VIII, figs. 6, 7, 8.

The shell is cylindrical, the upper half or third tapering to a rather small truncation; white, mottled and streaked with corneous-gray, as in *U. variegata*; glossy. Sculpture of rather low, coarse rib-striæ, closer and sharper on the tapering whorls and on the neck behind the lip. Whorls slightly convex, the last rounded below, very shortly free in front. The aperture is slightly oblique and a little longer than wide. Peristome white, expanded and reflected, continuous and free. Axis encircled by a small, thin, minutely serrate lamella.

Length 15, diam. 3.1 mm.; 13 whorls.

Length 12.5, diam. 3 mm.; 12 whorls.

"Lagunilla," a place about 6 miles due north from Cienfuegos, where there are several small brackish lagoons.

This species has much external resemblance to *U. poeyana lacteoflua* Pils. It is most closely related to *U. canteroiana* Arango, from which it differs by the variegated coloration, weaker ribs and smaller axial lamella. It is the only species of *Urocoptis* I found in the environs of Cienfuegos. The small lagoons at Lagunilla are slightly salt to the taste. The rocks and sticks are thickly coated with *Congerina*, and there is also *Neritina virginea*.

MICROCERAMUS SANCTISPIRITENSIS, n. sp. Pl. VIII, figs. 11, 12, 13.

The shell is shortly rimate, oblong-territe, tapering from the last or the penult whorl in a long cone which is slender and straight-sided above. Ground-color brownish-corneous, becoming gray-corneous on the last whorl, the apex whorl or whorls brown or gray subsequent whorls with sculpture of rib-striæ which are white except

where interrupted by narrow patches or streaks of darker ground-color. On the base there are often several spiral corneous bands, leaving one to three spiral zones of long white granules. The rib-striae are nearly as wide as their intervals, weaker in the corneous patches, and *continue upon the base*. Whorls rather convex, the upper ones more convex; last whorl rounded, with a very weak spiral cord defining the base, sometimes almost obsolete. The aperture is oblique; peristome well expanded, white, the columellar margin built forward, in a plane with the outer lip.

Length 12.7, diam. 5.5 mm.; whorls 10.

Length 11.3, diam. 5 mm.; whorls $9\frac{1}{2}$.

Length 9, diam. 4.3 mm.; whorls 9.

Near Sancti Spiritus, Province of Santa Clara, at a place called "San José rocks," about two miles northeast of the city.

This is a larger shell than *M. petitionus* (Orb.), also known as *M. tunricula* (Pfr.), with stronger, closer striae continuing over the base; it is not so wide and the spire is less attenuated above. The smallest shell found in a large series is 9 mm. long. Nearly all are over 10 mm.

San José rocks, conspicuous from Sancti Spiritus as a white ridge, stand upon a low ridge of gneiss which runs north of Sancti Spiritus. The rocks cover only a small area, but form a labyrinth of fissures, caves, tunnels, deep holes and knife-like crests, the whole clothed with trees and vines. Deeper and deeper I went, getting big *Megalomastomas* and *Helicea* in the cool rock chambers. The charming new *Urocoptis cora* hung on the cliffs. Operculates quite new to me were turning up. Finally I was quite lost in this absurdly diminutive jungle. I had dropped down several cliffs of eight or ten feet in gaining the heart of the thicket, and there was nothing to do but go on in as straight a course as I could steer. After a hard scramble of half an hour I emerged on the lower side, wet with perspiration and scratched by the sharp rocks, but happy in the possession of a fine bag of snails.

The rocks of San José are apparently a remnant of the Oligocene deposits which must once have heavily blanketed the gneiss in this region. Little trace of these beds remains in the country around Sancti Spiritus.

I found a variety of this species at Zaza del Medio, where on a small rocky hill or on the adjacent slope to the river I picked up two

lots, of 13 and 5 specimens respectively.¹ In one lot the shells are more conic than the types, with the rib-striæ more delicate and sharp, obsolete on the base. Specimens measure :

Length 10.5, diam. 5 mm.; $9\frac{1}{2}$ whorls.

Length 10, diam. 5 mm.; 9 whorls.

Length 9, diam. 4.2 mm.; 9 whorls.

In the other lot the shells are larger but also sculptured with delicate, thin rib-striæ, much narrower than their intervals. Length 13, diam. 6 mm., 10 whorls. This race may be called var. *tenuistriata* (pl. VIII, fig. 14).

MICROCERAMUS PERCONICUS TRINIDADENSIS, n. var. Pl. VIII, figs. 15, 17, 18.

The shell is imperforate, the last two whorls forming a broad, shortly cylindric part, those above rapidly tapering in form of a straight-pointed cone, slender above; rather glossy; corneous-brown, the last 4 or 5 whorls nearly covered with patches on which the striæ are opaque white. Whorls convex, the earlier ones more strongly so. Sculpture of regular, closely set, retractive striæ, as wide as their intervals, every second or third one a little enlarged at the upper end, forming an *irregular series of subsutural papillæ*. The last whorl is rounded, or there may be an inconspicuous very low cord upon which the striæ enlarge, defining the base. The aperture is oblique; peristome scarcely expanding, slightly thickened and white within, the interior elsewhere light brown. Columella vertical, straight, projecting forward a trifle near the insertion, the margin dilated above and adnate, not built forward.

Length 7.3, diam. above aperture 3.2, including aperture 3.75 mm.; whorls $8\frac{3}{4}$.

Length 7.7, diam. including aperture 3.9 mm.; 9 whorls.

Length 5.8, diam. including aperture 3.2 mm.; 8 whorls.

West side of "La Vigia," Trinidad, under stones, etc. Also on the northwest side.

M. perconicus trinidadensis stands near *M. angulosus* ("Gundl.," Pfr.) which it resembles in sculpture and in the structure of the columella, but it differs by the much more obese shape constant in a large number collected, and by the stronger sutural denticulation.

¹ Most of the small shells I got at Zaza del Medio were lost through an accident. These two lots were saved by being in bottles carried in my pockets.

The shape, indeed, is almost exactly that of the west Cuban *M. denticulatus*—a species less closely striated and having a rimate base and built-forward columellar margin. *M. petitianus* has narrower, more separated striæ and no denticulation below the suture; moreover, it has a shortly rimate base and forwardly-built columellar margin.

M. perconicus (which I described as a variety of *petitianus*) is doubtless a species distinct from *petitianus*, differing in sculpture and the columella, which is not in the least built forward. It is more strictly conic than *trinidadensis*, without sutural denticles, otherwise the same. *M. palenguensis*, which I have not seen, seems to be broader with a larger aperture.

The specimens recorded as *M. turricula* Pfr. from Trinidad were probably *trinidadensis*. I have not seen the form reported from Cabo Cruz.

MACROCERAMUS CANIMARENSIS (Pfr.).

A single specimen, typical in form and sculpture but white with a corneous base, I found among rocks in a precipitous, shaded place on the northwest side of La Vigia. It has already been reported from Trinidad.

MACROCERAMUS CANIMARENSIS ROTUNDIBASIS, n. subsp.

The shell differs from *canimarensis* by having only a very weak trace of the subperipheral keel (which is strongly developed in *canimarensis*); the base being much more convex than in *canimarensis*, and not so strongly striated.

"San José rocks" near Sancti Spiritus.

I did not find this species living, but dug it from a bed of clay formed by disintegration of the limestone.

A LIST OF MOLLUSCA FROM THE MUSSEL-SHELL VALLEY, MONTANA.

BY S. STILLMAN BERRY.

Except for the brief lists by Squyer (NAUTILUS, Vol. VIII, pp. 63-65, 1894) and Elrod (Bull. Univ. Montana, No. 10, pp. 170-174, 1902), there are very few molluscan records extant for the entire